

Appn No. 10/632,347  
Reply to Office Action of January 10, 2006

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A remote-detection system for monitoring changes in complex impedance associated with ~~the~~ physiological activity of a subject, comprising:
  - a source containing an oscillator configured to illuminate at least a portion of the subject with an electromagnetic signal beam; and
  - a receiver configured to receive reflections of the electromagnetic signal beam from the subject; observe changes in the amplitude of the electromagnetic signal reflected by the subject
  - a detector connected to the receiver and configured to extract from the reflected signal beam variations in amplitude that are indicative of time dependent variations in the complex impedance of the illuminated portion of the subject.
2. (Original) The remote-detection system of claim 1, wherein:
  - the source also includes a first antenna portion; and
  - the receiver includes a second antenna portion connected to thea detector.
3. (Cancelled)
4. (Currently Amended) The remote-detection system in claim 2[[3]], wherein the sourceRF oscillator and the receiverdetector are directionally coupled to a single antenna that acts as the first and second antenna portions.
5. (Cancelled)

Appln No. 10/632,347  
Reply to Office Action of January 10, 2006

6. (Currently Amended) The remote-detection system of claim 1[[3]], wherein:

the subject has a beating heart;

the complex impedance of the tissue of the subject ~~impedance of the heart~~ changes as the heart beats;

the amplitude of the reflected electromagnetic signal beam changes as the complex impedance of the subject's tissue heart changes; and

the detector is configured to detect~~extract~~ from the reflected electromagnetic signal beam variations in the amplitude of the electromagnetic signal reflected by associated with the changes in the complex impedance of the subject's tissue~~beating heart~~.

7. (Currently Amended) A remote-detection system for monitoring the physiological activity of a subject, comprising:

means for illuminating at least a portion of the subject with an electromagnetic signal;

means for detecting reflections of the electromagnetic signal; and

means for extracting a signal indicative of the observing changes in the amplitude of the electromagnetic signal reflected by the subject that are associated with changes in the complex impedance of the illuminated portion of the subject.

8. (Cancelled)

9. (Currently Amended) A method of observing changes in the complex impedance of a subject associated with monitoring the physiological activity of a subject, comprising:

illuminating at least a portion of the subject with an electromagnetic signal beam; and

extracting from the reflected signal a signal indicative of the observing changes in the amplitude of the electromagnetic signal reflected by the subject that are associated with changes in the complex impedance of the illuminated portion of the subject.

**AppIn No. 10/632,347  
Reply to Office Action of January 10, 2006**

10. (Currently Amended) The method of claim 9, further comprising observing changes in the reflected electromagnetic signal caused by changes in the complex impedance of the illuminated tissues driven by the subject's beating heart reflected by the beating of the heart of the subject.

11. (Original) The method of claim 9, further comprising observing the electromagnetic signal reflected by changes in the complex impedance of the illuminated tissue body of the subject.

12. (Currently Amended) The methods of claims 10 or 11, further comprising filtering the observed electromagnetic signal to remove components of the reflected signal associated with movement of by the surface of the subject.

13. (Cancelled)

14. (Cancelled)

15. (New) The remote-detection system of claim 1, wherein:  
the source is configured to generate an electromagnetic signal beam at a predetermined frequency;  
the receiver is configured to amplify the predetermined frequency of the received reflections; and  
the receiver is configured to filter the amplified signal to remove noise.

16. (New) The remote-detection system of claim 6, further comprises signal processing circuitry connected to the filter and configured to extract an electrocardiographic waveform from the reflected electromagentic signal beam.

17. (New) The remote-detection system of claim 16, wherein the signal processing circuitry comprises an analog to digital converter and a microprocessor.

**Appln No. 10/632,347  
Reply to Office Action of January 10, 2006**

18. (New) The method of claim 9, further comprising producing an electrocardiographic waveform from the extracted signal.